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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,875	07/14/2003	Yu-Chun Peng	250809-1030	6833

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EXAMINER

MARESCA, JOSEPH ANDREW

ART UNIT PAPER NUMBER

2675

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,875

Applicant(s)

PENG ET AL.

Examiner

Joseph Maresca

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:
on page 2, lines 15-17 the sentence beginning, "On the other hand" is not a complete sentence and does not make any sense in the context provided.

on page 7, line 20 the word response should be replaced with respond.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 4 and 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 4, the claim is written as a dependent of the device claim 1. However, the language of the claim draws to a method of operating the device as described in claim 1. This has been held to be indefinite as described in MPEP 2173.05(p).

With respect to claim 9, the requirement for 8 key status data is not appropriately defined and in its context is not definite. It is believed the claim was to read 8-bit key status data and this is the meaning that will be used for the following rejections on prior art.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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Claim 4 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

With respect to claim 4, the claim is outside the range of statutory subject matter since it is drawn to the elements of both a machine and a process and not to a single statutory group. MPEP 2173.05(p).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,585,792 submitted by applicant in an IDS).

With respect to claim 10, Liu teaches a keypad detecting method using a keypad input circuit (see Figure 3) wherein the keypad input circuit includes a keypad module (keyboard, not shown) which includes at least one key (obviously includes several rows and columns of keys, see Figure 3), and a microcontroller (column 2, lines 16-18).

Liu further teaches outputting a module status data (the occurrence of a key press) from the keypad module (keyboard) when the key is pressed (column 6, lines 23-28), wherein the module status data corresponds to the pressed key while the module status data includes a plurality of key status data.

Liu further teaches parallelly outputting the key status data to the conversion circuit (row and column lines, see Figure 3) and serially outputting the key status data from the conversion circuit (column 4, lines 9-15) to the micro-controller (13, column 2, lines 16-18) and recognizing the pressed key according to the key status data by the micro-controller (scan code, column 2, lines 33-36).

With respect to claim 1, Liu teaches a keypad device (keyboard) to be applied in an electrical device (computer systems, column 1, lines 19-22) which comprises a keypad module including at least one key, wherein when at least one key is pressed, the keypad module will output an interrupt signal (23),

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receives a drive voltage (24 and row inputs), and, according to the drive voltage, outputs a parallel signal corresponding to the key (combination of the row inputs and column output lines).

Liu further teaches a controller (112, encoder), being coupled to the keypad module (see Figure 3), wherein the controller (112, column 7, lines 16-23), receives the interrupt signal (23) and outputs the drive voltage (24) according to the interrupt signal (column 5 line 60 – column 6 line 36) and determines the status of the keypad module (column 2, lines 33-36) according to the signal received.

While Liu does not expressly state the existence of a parallel/serial conversion device coupled to the keypad module for receiving the parallel signal and outputting a serial signal according to the parallel signal, it is inherent that such a device exists as part of the controller (112, encoder). Since the data input into controller is parallel data and the data for the computer (11) is serial (column 4, lines 9-15), some sort of parallel/serial conversion device must exist as part of the controller (112). Since such a device would inherently exist within the controller (112), the determination of the keypad module status would be accomplished using this serial signal.

With respect to claim 5, Liu teaches a keypad module (key matrix) including at least one key, wherein when the key is pressed, the keypad module (key matrix) will output an interrupt signal (column 6 lines 23-31) and output a module status data (row inputs and column outputs), which include a plurality of key status data and corresponds to the pressed key (column 5, lines 53-63). Liu further teaches a control circuit (112), electrically connected to the keypad module (key matrix) and outputs a drive voltage (column 5, lines 53-63) and a clock signal according to the interrupt signal (column 4, lines 12-15 and 29-30).

Liu inherently teaches the existence of a conversion circuit electrically connected to the keypad module and the control circuit and being used for the receiving of the drive voltage and the clock signal, wherein the conversion circuit receives the key status data in parallel according to the drive voltage and serially outputs the key status data according to the timing of the clock signal. Since the data input into controller is parallel data and the data for the computer (11) is serial (column 4, lines 9-15), some sort of conversion circuit exists as part of the controller (112).

Liu further teaches the conversion circuit would be electrically connected to the keypad module using the row data and column data lines and the control circuit since it is an integral part of the circuit. The conversion circuit receives the key status data via the row and column data lines in parallel (see Figure 3) according to the drive voltage and serially outputs the key status data (column 4, lines 9-15) according to the timing of the clock signal (column 4, lines 26-34).

Liu does not expressly state the existence of a recognition circuit, being electrically connected to the conversion circuit, wherein the recognition circuit serially receives the key status data and recognizes the pressed keys according to the key status data.

However, it is inherent that such a recognition circuit does exist as part of the controller (112, encoder). Since the encoder must interpret each event into a standard data format (column 2, lines 33-36), such a recognition circuit must exist as a part of the encoder. As an integral part of the controller, the recognition circuit would be electrically connected to the conversion circuit and as such data would be transmitted to the recognition circuit as it was output from the conversion circuit (serially). It is also inherent the recognition circuit would recognize the pressed key according to key status data, since the key status data is what the conversion circuit converts from parallel to serial.

With respect to claim 2, Liu further teaches the controller comprises an input/output pin (column 5, lines 64-67) which is coupled to the keypad module (see Figure 3).

With respect to claim 4, Liu further teaches outputting an interrupt signal from the keypad module to the controller (112) when the key is pressed (column 6, lines 23-31), outputting the drive voltage from the controller (112) to the keypad module according to the interrupt signal (column 5 lines 54-63 and column 6 lines 29-31).

Liu further teaches outputting a parallel signal (row inputs and column outputs) corresponding to the key (column 5 lines 56-57), converting the parallel signal into a serial signal (11, column 4 lines 14-15), and determining the status of the keypad module (key matrix) according to the serial signal by the controller (112, column 2 lines 33-36).

With respect to claim 6, Liu further teaches the control circuit and the recognition circuit are installed in a micro-controller.

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Since all elements taught by Liu and discussed above in the rejection of claim 5 are contained within the encoder, which is a microcontroller, the control circuit and recognition circuit would also be contained therein.

With respect to claim 7, Liu further teaches the interrupt signal is at a low-level voltage (column 6, lines 28-31).

With respect to claim 8, Liu further teaches the drive voltage is at a high-level voltage (column 5, lines 61-63).

With respect to claim 9, Liu further teaches the module status data include 8-bit key status data.

Liu teaches using the standard PS/2 protocol for keyboards (column 4, lines 18-25). This standard protocol uses 8-bits of data to convey the key pressed.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,585,792 submitted by applicant in an IDS) as applied to claims 1, and further in view of Griffin (US Patent No. 6,489,950).

With respect to claim 3, Liu teaches all the elements of claim 1 as discussed in the rejection under 35 USC 103.

Liu does not expressly teach the electrical device is a PDA (personal digital assistant).

In the same field of endeavor (computer input and control devices), Griffin teaches a keypad device (4008) included within a PDA (personal digital assistant, column 1, lines 20-27).

It would have been obvious to one of ordinary skill in the art to combine the PDA with keyboard of Griffin with the keyboard input control system of Liu in order to reduce power consumption so the device can be used longer without being connected to a household electrical current (Liu, column 1, lines 8-18).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No. 3,909,818 to Dalke discloses a keyboard device used in a television system that outputs the data from the keyboard device in parallel to a parallel-to-serial conversion unit and also outputs a strobe signal that operates in a similar fashion to an interrupt.

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US Patent No. 5,760,714 to Zimmerman discloses a keypad device connected to a microcontroller where an interrupt signal is created when a button is pushed and driving signals are selectively output on a row-by-row basis to determine the row in which the key press occurred.

US Patent No. 5,925,110 to Klein discloses a system for a wireless keyboard device where data is transmitted to and from the keypad circuit using either a microcontroller or separate parallel-to-serial and serial-to-parallel conversion devices.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Maresca whose telephone number is (571) 272-5517. The examiner can normally be reached on M-TH and alternate Fridays 7:15 am to 4:45 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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11/28/05


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